

AMENDMENTS TO THE SPECIFICATION

In the Specification

Please substitute the following amended paragraph(s) and/or section(s) (deleted matter is shown by strikethrough and added matter is shown by underlining):

Page 1, line 13, please amend the header as follows:

~~Scope~~ Field of the Invention

Page 1, line 14 – line 16, please amend the paragraph as follows:

The invention ~~covers the~~ relates to procedure and arrangements for spatially perceptible representations, in particular one that presents a spatially perceptible image to several viewers without requiring auxiliary means such as eyeglasses.

Page 1, line 19, please amend the header as follows:

~~State of the art~~ Background of the Invention

Page 1, line 35 – page 2, line 2, please amend the paragraph as follows:

In this regard it is well-known that for the normally sighted human eye with a visual acuity of $S=1$, two neighboring points under a viewing angle of approximately less than one arc minute (equivalent to approximately 0.017° in decimally divided degrees) are no longer ~~dissolvable~~ resolvable.

Page 2, line 18 – line 25, please amend the paragraph as follows:

- from each viewing position, a viewer ~~optically~~ visually perceives with one eye the partial information of a first selection and with the other eye he optically perceives the partial information of a second selection from the A_k views ($k=1 \dots n$), where the invention complies with the requirement that the corresponding average geometrical distance p' between two adjacent light-transmitting optical elements on the structural plate fulfills the $p' \leq p$ condition, on which $p=G * \sin (0.017^\circ)$, where G is the quadruple of the diagonal length of the α_{ij} picture elements matrix.

Page 2, line 29 – line 33, please amend the paragraph as follows:

When the aforementioned ~~unequation~~ inequality is fulfilled, it causes that a normally sighted viewer with a visual acuity of $S=1$, who is watching the picture elements on the matrix from a viewing distance of the quadruple of the diagonal length of the matrix, cannot visually resolve ~~dissolve any longer~~ two adjacent light-transmitting optical elements. With this, an improved spatially perceptible representation is achieved.

Page 3, line 1 – line 8, please amend the paragraph as follows:

To that effect, the mentioned ~~unequation~~ inequality can only get worse, when the average geometrical distance p' which corresponds to two adjacent successive light-transmitting optical elements on the structural plate fulfill the $p' \leq p''' \leq p$ condition, on which $p''' = H * \sin (0.017^\circ)$, where H is two-and-one-half times the diagonal length of the picture elements matrix α_{ij} . Thereby a normally sighted viewer with a visual acuity of $S=1$ would not visually dissolve any

more the adjacent light-transmitting optical elements from a viewing distance of two-and-one-half times the diagonal length of the matrix.

Page 3, line 10 – line 13, please amend the paragraph as follows:

It is also possible to shape an even smaller average geometrical distance p' , so that likewise those viewers with a visual acuity of $S > 1$ do not visually ~~dissolve any more~~ resolve the adjacent successive light-transmitting optical elements from the mentioned viewing distance.

Page 3, line 27 – line 30, please amend the paragraph as follows:

For this arrangement, the transparent filter elements - essentially the entire visible light spectrum - are arranged in a rectangular shape, preferably staggered between each other, whereby preferably each two partially overlap themselves respectively in adjacent lines or columns.

Page 4, line 1 – line 2, please amend the paragraph as follows:

~~Apart from that, [[1]] Likewise can be used~~ filter elements can be used which are respectively ~~translucent~~ transparent for light of selected wavelengths or wave ranges.

Page 4, line 4 – line 13, please amend the paragraph as follows:

The partial information of the first and the second selections from the A_k views ($k=1 \dots n$), which a viewer optically perceives with one eye and with the other, correspond in each case to the exact partial information of one or several A_k views ($k=1 \dots n$), whereby, for example, the

viewer predominantly ~~notices with~~ perceives each eye the corresponding mentioned partial information for the first and second selections. This last mentioned issues are described by the applicant in more detail in DE 100 03 326 C2. In addition, it can also be favorable, if the viewer sees accurately with each eye the mentioned partial information for the first and second selections, and if these selections cover in each case a precise A_k view ($k=1 \dots n$). The applicant refers to PCT/EP2004/004464 in this regard.

Page 4, line 20 – line 21, please amend the paragraph as follows:

- are located within a distance of 2.5 ~~[[or]]~~ to 4 times the diagonal length of the matrix.

Page 4, line 31 – line 34, please amend the paragraph as follows:

This way, the preferred viewing distance which becomes inseparably related to the corresponding (minimal) required distance for not ~~dissolving~~ resolving visually the optical elements of the 3D optical effect (in this case, the optical elements on the structural plate).

Page 5, line 14 – line 18, please amend the paragraph as follows:

- at least one structural plate in the viewing direction in front or behind the image reproduction mechanism, arranged to ~~force~~ direct the required propagation direction of the light radiated from the α_{ij} picture elements, where the structural plate shows multiple optical elements arranged accordingly for this purpose,

Page 5, line 32 – page 6, line 2, please amend the paragraph as follows:

The image rendering device with multiple individual picture elements α_{ij} in a matrix with j lines and i columns i can be, for example, a 17" TFT-LCD monitor like the ViewSonic VX700 or the 50" Pioneer PDP 503 MXE plasma monitor, on which the picture elements α_{ij} correspond to the RGB color sub pixels. An electronic control system, which can consist, for example, of a commercial PC, ensures that the α_{ij} picture elements display the partial information from the different A_k views ($k=1 \dots n$) of the scene/subject.

Page 6, line 24 – line 31, please amend the paragraph as follows:

In a special arrangement of the configuration according to the invention, the average geometrical distance p' fulfills the $p' \leq p''' \leq p$ condition, for two contiguous successive light-transmitting optical elements on the structural plate, on which $p'' = H * \sin(0.017^\circ)$ applies, where H is two-and-one-half times the diagonal length of the picture elements matrix α_{ij} . Thereby the normally sighted viewer with a visual acuity of $S=1$ would not visually ~~dissolve~~ resolve any more the adjacent light-transmitting optical elements already from a viewing distance of the two-and-one-half times one of the diagonal length of the matrix.

Page 6, line 33 – page 7, line 1, please amend the paragraph as follows:

The partial information of first and the second selections from the A_k views ($k=1 \dots n$), which a viewer ~~optically~~ visually perceives respectively with each eye, correspond in each case to the precise partial information from one or more the A_k views ($k=1 \dots n$), whereby the viewer

can perceive with each eye the preponderant or exclusive mentioned partial information from the first and second selections.

Page 7, line 19 – line 22, please amend the paragraph as follows:

This way, the preferred viewing distance which becomes inseparably related to the corresponding (minimal) required distance for not ~~dissolving~~ resolving visually the optical elements of the 3D optical effect (in this case, the optical elements on the structural plate).

Page 7, line 29, please amend the header as follows:

Brief Description of the ~~diagrams~~ Drawings

Page 8, line 9, please amend the header as follows:

Detailed Description of the ~~diagrams~~ Drawings

Page 8, line 32 – page 9, line 2, please amend the paragraph as follows:

In this preferred arrangement, the transparent filter elements for the entire visible ~~light~~ spectrum are arranged in a rectangular array, preferably staggered between each other, where every two transparent filters partially overlap themselves respectively in adjacent lines and columns. Other forms than rectangular shapes are also feasible for the transparent filters. An example for the arrangement of the filter elements is shown in Fig.1.

Page 9, line 4 – line 6, please amend the paragraph as follows:

Such a structural plate can easily be made from exposed photographic film, which incorporates the transparent and the opaque filter elements and which is laminated on a glass plate. Further arrangements are ~~conceivable~~ possible.

Page 11, line 1 – line 5, please amend the paragraph as follows:

Therefore, for this example ~~applies~~ the invention-based criterion applies that the average geometrical distance p' for two adjacent series of light-transmitting optical elements on the structural plate fulfills in each case the $p' \leq p$ condition, for which applies that $p = G * \sin(0.017^\circ)$, where G is the quadruple of the diagonal length of the α_{ij} picture elements matrix.

Page 11, line 7 – line 19, please amend the paragraph as follows:

In case that the 'a' value were smaller than the selected one, e.g. $a = 0.08$ mm, then $p' = 0.316$ mm. In this special arrangement, the average geometrical distance p' for two adjacent series of light-transmitting optical elements on an even structural plate fulfills in each case the $p' \leq p''' \leq p$ condition, for which applies that $p'' = H * \sin(0.017^\circ)$, where H is two-and-one-half times the diagonal length of the α_{ij} picture elements matrix. Thereby a normally sighted viewer with a visual acuity of $S = 1$ could not visually ~~dissolve~~ resolve the adjacent series of light-transmitting optical elements from a viewing distance of 2.5 times the diagonal length of the α_{ij} picture elements matrix. Further improvements, like in particular the ongoing technical trend of reducing the width and height of the image rendering elements (e.g. with future image rendering devices), also serve indirectly for reducing the 'a' parameter; thus the aforementioned non

~~dissolvability~~ resolvability can be achieved from even shorter viewing distances than distance H. This is included in the context of the invention.

Page 11, line 22 – line 31, please amend the paragraph as follows:

In the arrangement example, the partial information corresponds to the first and second selections from the A_k views ($k=1 \dots n$), which a viewer perceives optically in both eyes the respective partial and precise information of one or several A_k views ($k=1 \dots n$), whereby the viewer optically perceives with each eye in each case exclusively the mentioned partial information for the first and second selections. The applicant describes the above mentioned facts in further detail in DE 100 03 326 C2, as well as on Fig.4 and Fig.5. The vision of excluding partial view information per eye for achieving the spatial impression is described in the already mentioned PCT/EP2004/004464. An improved 3D impression is obtained by the non ~~dissolvability~~ resolvability feature of the optical elements.

Page 14, line 10 – line 15, please amend the paragraph as follows:

The invention offers on the one hand the advantage that the arrangements and procedures of the initially mentioned kind of structure for the 3D optics for the normally sighted naked eye are designed to be indissoluble as far as possible. On the other hand, the visible ~~dissolving~~ resolving of the 3D image is increased at the same time. Thus the quality of the spatially perceptible representation will improve and the undesired picture effects are minimized.